A LABORATORY MANUAL FOR HUMAN BLOOD ANALYSIS. By M.K. Bhasin and S.M.S. Chahal. Delhi: Kamla-Raj Enterprises. 1996. 327 pp. ISBN 81-85264-09-X. $70.00 (cloth).

Blood is a prime source of genetic material that could readily be used to detect genetic variation at various loci within and between individuals. The development of analytical and molecular techniques to detect genetic variation from human blood has contributed enormously in our understanding to delineate the genetic basis of several diseases and also to assess genetic differences between different human racial groups. Historically, the first study on human blood genetic markers was carried out on red blood cell antigens, the ABO blood groups. Subsequently, the discovery of electrophoretic techniques in porous gel media like starch, agarose, and polyacrylamide enabled the detection of genetic variation in blood proteins and enzymes. Further refinements of protein detection methods and the use of sensitive and versatile isoelectric focusing (IEF) and immunoblotting techniques made it possible to detect additional genetic variation which was beyond the detection limit of conventional gel electrophoresis methods. The protein detection methods, however, have limitations because they cannot detect all possible variation within a gene and its flanking regions. This problem was solved by the development of molecular techniques to assess the gene directly at the DNA level, first by Southern blotting and now by polymerase chain reaction (PCR). Although rapid advances in DNA techniques have largely replaced or limit the use of protein detection methods in a modern laboratory, they are still useful for screening a large number of protein polymorphisms, especially in those cases in which the source of material is only plasma or red blood cells. This book is an attempt to summarize various methods to detect genetic variation in human blood.

The book is divided into 13 chapters. The first chapter provides a general background to the collection and storage of blood; the second gives techniques to examine blood cells in a clinical laboratory. Chapters 3 and 4 deal with hemoglobins and glucose-6-phosphate dehydrogenase (G6PD), respectively. These chapters give techniques to screen different molecular forms of hemoglobins and G6PD and provide their allele frequencies in the Indian subcontinent populations. Chapter 5, the largest in the book, details procedures to screen various forms of human blood group systems and gives their distributions in different population groups, with emphasis on India. The next two chapters are focused on the serological typings of HLA and immunoglobulins. In Chapter 6, special attention has been paid to clarify the complicated nature of HLA designations and nomenclature. Unlike other chapters in this volume, however, in which the emphasis of gene frequency data has been placed on Indian populations, this chapter lacks HLA frequency data for India.

Chapters 8 through 10 deal with general electrophoretic techniques and their application to screen genetic variation in serum proteins and red cell enzymes. Chapter 8 provides a general account of electrophoretic techniques in different supporting media, including starch, agarose, cellulose acetate, and polyacrylamide, followed by descriptions of protein detection methods. Unfortunately, this chapter does not provide any theoretical background about electrophoresis and the relative merits of using starch, agarose, or polyacrylamide as protein-separating media. A brief description is given about protein immunoblotting and pulsed-field gel electrophoresis, but no technical detail is provided regarding their application; the readers are referred to review articles instead. Chapter 9 describes electrophoretic techniques to screen five serum proteins, summarizing their population distributions with major emphasis on Indian populations. Unfortunately the techniques described here are not state of the art. For example, genetic polymorphisms in transferin and vitamin D–binding protein (GC) have been routinely screened by IEF methods for now almost two decades, but they are not included in this chapter. Paradoxically, the schematic IEF patterns of these two polymorphisms, which are adopted from two published sources without acknowledgment, are given, but no technical detail is provided. On the other hand, to screen the GC

polymorphism an immunoelectrophoresis method hardly used these days is described in detail. Furthermore, no example is provided to screen those proteins which are present at low abundance in serum although they could be analyzed by a combination of IEF and immunoblotting techniques. Chapter 10 describes conventional electrophoretic techniques and gives the population allele frequency distributions of nine commonly sampled polymorphic red cell enzymes. Although the IEF patterns of PGM1 phenotypes are presented, the IEF method is not described at all.

Chapter 11 describes the methods of DNA isolation and quantitation and the digestion of DNA with restriction enzymes followed by Southern blotting. Although the chapter is titled "DNA polymorphisms," no example of any DNA polymorphism is provided. It is disturbing to note that although PCR is considered to be the state-of-the-art technique for screening DNA polymorphism today, it is not discussed at all. Chapter 12, devoted to the description of four genetic traits which are not detectable in human blood, is out of place here because the primary focus of this book is on blood markers. The final chapter describes and illustrates examples of statistical analyses to calculate allele frequencies, heterozygosity, and genetic distance.

Overall, this book falls well short of covering the state-of-the-art techniques which presently are routinely used in the detection and screening of genetic variation in human blood, and therefore it will not find a wide use in a modern laboratory. Its exclusion of the state-of-the-art techniques and its emphasis of gene frequency data from Indian populations suggest that it was not meant for a global readership. However, this book may be useful for those still using conventional methods, without the means and resources to equip their laboratories with contemporary molecular technology. Its relatively high cost is problematic.

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IN QUEST OF THE SACRED BABOON: A SCIENTIST'S JOURNEY. By Hans Kummer. Princeton, NJ: Princeton University Press. 1995. 337 pp. ISBN 0-691-03071-9. $29.95 (cloth).

Sir Solly Zuckerman's studies of the hamadryas baboons of London Zoo in the 1930s heralded the beginning of modern primatology. Because of their extravagant behaviors, he argued that sexuality formed the basis of primate sociality. Twenty-five years later, Hans Kummer, equally captivated by the hamadryas baboons at the Zurich Zoo, began to characterize features of hamadryas society that distinguish it from that of its African savannah relatives. This, his third book on primates and second on the hamadryas baboons of Ethiopia, summarizes material formerly presented in scholarly papers, enlivening it with his journal entries and narrative observations from the field. The intended audience is wide, asking only that one be drawn by love of nature and exploration.

How could one not be fascinated by hamadryas baboons? Inhabitants of sere and extreme landscapes, the physical beauty of these animals and their surroundings rivets one's attention. But it is the complexity of their multileveled social organization, its response to the exigencies of dispersed and sparse resources, and its domination by male–male interactions, alliances, and contests which truly captivates. The successful hamadryas male, shepherding his female harem and their juvenile and infant dependents across sheer volcanic cliffs to their night-time roosts, has come to this lucky state by negotiating a wide variety of social roles that encompass deference, subterfuge, maternal behavior, competition and, occa-